

A U S T R A L I A N

# BULK HANDLING

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## A Revolution in Feeder Technology



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# From ribbon to rotary batch mixer at food plant

Mixer manufacturer Munson says that a switch from a ribbon blender to one of its rotary batch mixers cuts costs and boosts output at a food ingredient processor.

Quality Powder Ltd. of Ontario in Canada custom blends a variety of key food ingredients for one of the country's largest makers of gum-based ingredients used in packaged foods such as hamburger patties, breads, fish, chicken and dairy products.

In 2010, Quality mixed more than 2,500 tonnes of ingredients using a ribbon blender, which did a sufficient job of blending, but presented a number of problems that management solved by converting to a rotary batch mixer.

## Immersed seals and residual material incurred labour cost, downtime

"We were spending significant time maintaining the ribbon blender," said Charles B. Abarado, company president. "The shaft seals come in contact with powders, some of which corrode or dry-out the seals, requiring seal replacement every three or four weeks. In addition, the seals contaminate the ingredients."

"As our volume increased, so did the amount of maintenance required. At the same time, we began to increase the number of product changeovers. Every time, we had to spend as much as 1 - 1/2 hours just to make a cleanout because residual powder would settle at the bottom of the blender's trough."

## Conforming to customer requirements

"When our customer decided to increase volume without outsourcing to multiple toll houses, we decided to expand with them," Abarado explained.

Quality works closely with its customer to increase efficiencies. "We blend special types of gums that are used in prepared foods as binders and stabilisers," said Abarado. "It's customised, so we blend formulas that can include anywhere from two up to 11 types of ingredients in one batch. Particle sizes of raw materials range from 60 to 300 mesh (250 to 450



Upon discharge, the 3.96 cu m capacity rotary batch mixer evacuates completely, says Munson, with little or no residual, allowing fast, thorough cleaning between batches. Continuous rotation of the drum assures that all materials remain in motion, preventing segregation in batches of varying material densities.

microns), and bulk densities range from 0.85 to 1.42 kg/cu m."

Raw materials typically arrive at Quality's 1,486 sq m facility in 25 kg bags. After blending they are packaged in 25 kg bags or in 1,000 kg bulk bags for shipment to the customer.

## Growing pains cured with new blender

"We were looking for a way to eliminate maintenance related to seals, and time related to manually removing 15 or 20 kg of residual material every time we blended a different formulation or shut the equipment down," says Abarado.

"On some days, our workers have a minimum required output. If there was a product changeover during a shift, they lost an hour or more doing a cleanout, sweeping, vacuuming and making sure that residual material was removed from the ribbon blender."

"When we decided to increase our capacity we specified a Munson Model 700 stainless steel rotary batch mixer with a 3.96 cu m capacity. It accommodates our batch weights of 2,500 kg, in excess of what a cone blender can handle. Because the drum rotates on external trunnion

rings, there is no internal shaft with seals immersed in the material, eliminating a maintenance and cross-contamination problem. In addition, the mixer evacuates upon discharge with little or no residual, allowing rapid, thorough cleaning."

Quality received the mixer in January 2011 and performed its own installation. "We just mounted it on our own structure, connected the power and we were ready to go. We had no problems with startup; everything internally on the machine was connected and we just began blending. The operation of the unit is actually very easy," said Abarado.

## Cleaner, faster production

"Each batch blends in about three minutes and we don't have to worry about leftover residue. It's a complete cleanout because the rotating drum's internal mixing flights and lifters direct material towards the discharge gate, which discharges 100 percent of the batch."

"We also wanted a better product blend that is more homogenised," Abarado said. Continuous rotation throughout the entire blending cycle assures that all materials remain in motion, preventing segregation in batches of varying material



Powders discharge from mixer into hopper and then to bagging machine, which fills 25 kg bags or 1,000 kg bulk bags.



Quality Powder Ltd. custom blends batches that include anywhere from two to 11 types of ingredients with particle sizes ranging from 60 to 300 mesh (250 to 450 microns).

densities. The machine tumbles, turns, cuts and folds the material in a four-way mixing action that produces a homogenous blend with no segregation upon discharge.

Quality ordered the machine with two doors and a drain for unrestricted access to internal surfaces during washouts. "After a batch is blended, we clean the machine and proceed directly to blend the next batch. We don't have to wash out after every batch, even though the ingredients vary according to the customer specifications. If we do need a washout, the drain makes it easy." The absence of residual material, coupled with dual, clean-out doors allows sanitising in

minutes, preventing cross-contamination between changeovers.

"Food safety-wise, it's well compliant," said Abarado. Quality ordered the standard 80-grit, #2B mill finish. All product contact surfaces are stainless steel. Internal welds have a minimum 4.23 mm radius to eliminate corners, cracks and crevices to avoid material entrapment.

Quality also specified an internal spray-line coating option for batches requiring liquids or moisturised air.

Although the old ribbon blender and the new rotary mixer have the same capacity, the ribbon unit requires a 37.3 kW electric motor versus 14.9 kW for the rotary mixer, substantially reducing energy usage.

### Living with both blenders

"Our plant personnel prefer to work on the Munson line due to reduced labour and approximately one-sixth the maintenance of the ribbon blender line," says Abarado, adding, "Because the rotary mixer also delivers greater batch uniformity, we use it to blend all of our food products for which homogeneity is critical. As a result we've had good customer feedback since we installed it.

"The machine saves Quality Powder a considerable amount of time on maintenance and has improved our critical quality control points. It should last us 30 to 50 years...at least," Abarado concludes. ■

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